

PARALLEL DATA NETWORK BILLING
AND COLLECTION SYSTEM

This Application is a continuation-in-part of the following: U.S. Patent Application Serial No. 08/996,311, filed December 22, 1997, incorporated herein by reference; U.S. Patent Application Serial No. 09/120,848, filed July 22, 1998, incorporated herein by reference; and U.S. Patent Application Serial No. 09/298,040, filed April 22, 1999, incorporated herein by reference.

Field of the Invention

The present invention relates generally to billing for information, goods, services and the like made available to a user on a computer or data network, and more particularly, to a method for such billing and collection linked to a separate telephone connection associated with a billing network that manages and bills for access to information over the computer or data network.

The present invention relates generally to billing for on-line services made available to a user on a computer or data network, and more particularly, to a billing and collection system and method in which access to such services on the computer or data network and billing therefor is linked to a telephone connection associated with a billing network that manages and bills for access to information over the data network.

Background

With the advent of data networks such as the Internet, World Wide Web, bulletin board systems, and commercial on-line services, electronic commerce has become one of the fastest growing segments of the economy. The most readily available form of commerce is the exchange of information to an end-user for payment. While these data networks are adept at disseminating information, collection of payment has been problematic--holding back the growth of electronic commerce.

Methods of collecting payment for information can be separated into two broad categories, on-line and off-line. On-line methods include the transfer of credit card numbers and the use of digital cash. Off-line methods require the end-user to mail in cash or checks. These approaches can be cumbersome, time consuming and risky from a security standpoint.

Transferring credit card numbers via the Internet, for example, carries the risk of theft from unscrupulous computer hackers and thieves, who can tap into a

server connected to the Internet and search for messages containing 16 digit numbers. Digital money systems (e.g. DigiCash, eCash, etc.) are presently a long way from practical implementation, with no standards having yet been established. Another problem associated with the use of credit cards, is that some users may not even be able to qualify for one, or have a sufficient amount of credit. Vendors are also discouraged from billing small amounts on credit cards because of the relatively high transactional costs as a percent of the sale.

While cryptographic systems will eventually enable the safe transmission of credit card numbers through cyberspace, some users will never feel completely comfortable providing their credit card numbers in this manner, even if the communications are ostensibly made secure.

Additionally, there exists a problem in that casual short-term or single usage visits to an information provider on a computer network cannot be charged in an economical manner for both the information provider and the user. For example, if an information provider wanted to charge twenty-five cents to view a one time copy of a "top ten" list, the end-user obviously would not want to set-up a credit or cash account as the expense to establish such an account would exceed the value of the one-time information obtained. The minimum practical credit card charge exceeds \$2.50.

There have been attempts to use existing telephone-based billing and collection systems to bill for such information, however those have many disadvantages. One type is a 900-number-based billing system, which is cumbersome, difficult to use, and generally ineffective as described in more detail below.

Specifically, all of the existing systems use codes that are simply passwords, and are limited to the particular data site for which they were issued. These codes do not represent "value" and therefore cannot be used to control or limit access to digital data.

A second major problem with existing systems is that the information site must be "intelligent" and able to store and maintain codes in order to know which codes are valid (e.g. when does a code expire). This greatly increases the information provider's cost for providing digital information and greatly limits the number of information providers that can afford the additional overhead, thus reducing commerce and competition on data networks.

A third major problem with existing systems is that neither the data network nor the information provider is connected to the billing system. This

severely limits their ability to provide even basic customer service to users of the system.

A fourth major problem with existing systems relates to the use of the 900 system itself. Information providers are limited as to the amounts charged for information. The 900-number system provider in existing systems offers no more than seven different dollar amounts they can charge on their 900-numbers. Each 900-number represents a different dollar amount charged to a consumer. For example, a 900-number system provider has three different 900-numbers, each corresponding to a different dollar value, \$10, \$15 and \$20. An information provider using such a system for billing would be limited to those dollar amounts regardless of the value of the information they were selling. Additionally, the dollar charges cannot reflect the number of times a user, or multiple users, has had access to information, and the consumer is billed immediately for the 900-number call, even if they never receive the digital information.

A specific example of one such system is known as Web 900, offered by Logicom, Inc. In that system, the user calls a given 900-number, in exchange for which he is provided a code valid for a specified time period for unlimited access to a particular information site, and the information site locally verifies the validity of the code. There are several problems with this arrangement. First, there is no way to control access to the information by the number of uses. Users are forced to pay for unlimited access even if the user desires one piece of information or single use access. Second, since the data network has no way of preventing access to unauthorized users in possession of the code, the code could be posted to a BBS or newsgroup on the web, allowing for repeated uncontrolled use by anyone reading the posting. Third, the codes provided are usable only at a particular information site. A code provided for the purchase of five dollars worth of information at information site "A" cannot be used for the purchase of five dollars worth of information at site "B." Finally, the data network must have the ability to store codes, and must have software to verify each code entered.

One of the key problems with on-line services (the "Internet") as it relates to commerce is the difficulty of Internet information service providers ("on-line service providers") to charge users per-minute, incremental or flat fees for usage. One way these fees are charged for access to various on-line service providers is by simply billing the user's on-line service account when such an account exists.

Another way by which information providers can collect payment is by having the user establish an account with the on-line service providers on a billing or credit card charge basis. This approach can be cumbersome, time consuming

and risky from a security standpoint. Moreover, for on-line service provider access where relatively low costs are incurred, the collateral costs associated with small incremental billing make this approach uneconomical. Unfortunately, transferring credit card numbers via the Internet carries the risk of theft from unscrupulous computer hackers and thieves, and digital money or encryption metering concepts are still a long way from practical implementation.

Although encryption systems will eventually facilitate the common use of credit card numbers for transmission through cyberspace for decryption at the on-line service provider, some users will never feel completely comfortable providing their credit card numbers in this manner, even if the communications are ostensibly made secure. Moreover, some users may not be able to obtain a credit card or have one available with a sufficient amount of credit. Furthermore, credit card companies may assess or require a minimum charge in order to process the billing.

In summary, there exists a problem that casual short-term or single usage visits to an on-line service provider on a computer network cannot be charged for access on a per-minute or fractional basis in an economical manner for both the on-line service provider and the user.

Summary of the Invention

In accordance with one embodiment of the present invention, an access controller connects to a user via a second connection and provides the user access to data provided by a server, in which access is via a first connection between the user and the server.

Brief Description of the Drawings

FIG. 1 illustrates a first embodiment of the present invention.

FIG. 2 is a block diagram showing one embodiment of the access management system.

FIG. 3 is a block diagram showing an exemplary end-user site.

FIG. 4 is a block diagram showing an exemplary data network.

FIG. 5 is a block diagram showing an exemplary access management system.

FIG. 6 is a block diagram showing an exemplary billing system.

FIG. 7 illustrates an exemplary information search procedure in an asynchronous embodiment.

FIG. 8 illustrates an exemplary billing procedure associated with granting access to information in an asynchronous embodiment.

FIG. 9 illustrates an exemplary process for verifying the validity of access codes in an asynchronous embodiment.

FIGS. 10A, 10B and 10C illustrate an exemplary synchronous embodiment.

FIG. 11 illustrates an exemplary procedure for limited use access codes.

5 FIG. 12 illustrates an exemplary embodiment for purchasing physical goods.

FIG. 13 illustrates an exemplary procedure for the use of digital tokens in the purchase of information.

FIG. 14 illustrates operational aspects of the billing system.

10 FIG. 15 illustrates the process of collecting payment from the end-user, and the distribution of these funds to the content and system providers.

FIG. 16 is a schematic of the billing and collection system in accordance with a first principal embodiment of the present invention.

15 FIGS. 17A, 17B, 17C and 17D depict a flowchart of the billing and collection process in the first principal embodiment.

FIG. 18 is a schematic of the access message database.

FIG. 19 is a schematic of the billing and collection system in a second principal embodiment of the present invention.

20 FIG. 20 is a schematic of the billing and collection system in a third principal embodiment of the present invention.

FIG. 21 is a flow chart of the billing and collection process in the third principal embodiment of the present invention.

FIG. 22 is a schematic of the billing and collection system in a fourth principal embodiment of the invention.

25 FIG. 23 is a flow chart of the billing and collection process in the fourth principal embodiment of the invention.

Detailed Description of the Preferred Embodiments

30 In various embodiments of the present invention, information is communicated to an end-user from a data site, while billing is implemented through a billing system, with communications between the data site and billing system managed by an access management system. The billing system may, but need not, include a "900 type" shared-revenue telephone line.

35 In various embodiments of the present invention, an access management computer controls a user's access to digital data located at a data site, while causing a billing system to toll the user's access to the data. In this embodiment of the invention, the access management computer receives from the billing system a

first access code corresponding to the user's request for access to the digital data. The access management computer receives a second access code from the data site, and verifies that the first access code corresponds to the second access code. (The first and second billing codes may be received in either order.) The access management computer communicates a message confirming the verification to the data site, thereby authorizing the user's access to the digital data. To complete the transaction, the access management computer authorizes the billing system to post an access charge to an account associated with the user based upon the user's access to the digital data.

In various embodiments of the present invention, a method and apparatus are provided for using a billing site to toll a user's access to digital data at a data site by signaling an access management computer to authorize the user's access to the digital data. In this embodiment of the invention, the billing site receives a user's request for access to the digital data, the request for access being associated with a billing account for charging the user, and including a code corresponding to the digital data. The billing site routes to the access management computer a signal indicating that the billing site has received the code corresponding to the user request for access to the digital data. Subsequently, the billing site receives from the access management computer a signal that the user has received access to the digital data. In response, the billing site posts an access charge to the billing account based upon the user's access to the digital data.

In various embodiments of the present invention, a method and apparatus are provided for a user to access stored digital information at a data site. In this embodiment, the user communicates to a billing system a first access code authorizing the billing system to charge his billing account for access to the stored digital information. The user receives from the billing system a second access code permitting the user to access the stored digital information at the data site. The user connects to the remote data site, and provides to the remote data site the second access code whereby to gain access to the stored digital information.

In various embodiments of the present invention, a method and system are provided for using a billing site to toll a user's access to a data site through an access management computer, wherein the user establishes a communications link between himself and the billing site, the communications link being associated with a the user's billing account. A communications link is established between the billing site and the access management computer, and the billing site sends the access management computer a signal indicating that the communications link between the user and the billing site is active. This signal authorizes the user

access to the data site. Subsequently, the billing site receives from the access management computer a signal that the user has received access to the data site, and posts via the billing site an access charge to the billing account based upon the user's access to the data site.

5 In various embodiments of the invention, the billing site, or billing system, includes a shared-revenue telephone system - typically a "900 number" or equivalent. The data sites comprise database providers, for example, as may be found on the Internet or through other means of user access. The user is typically remote, while the billing system, access management computer, and data site may
10 be all or in some limited combination co-located.

In various embodiments of the invention, information is communicated to a user through a data network or first channel of communication, and billing is implemented through a billing network or second channel of communication.

15 In various embodiments of the invention, a user on the Internet can gain access to an on-line service provider and incur costs associated with such access through the use of a telephone-line communicating through a billing network.

In various embodiments of the invention, de-coupled time definite billing for on-line services is provided over a data network, where the billing is implemented through the use of a telephone line associated with a billing network.

20 In various embodiments of the invention, a billing and collection system provides access to on-line services over the Internet. Billing therefor is implemented through a 900-type shared revenue based toll fee network over the billing network for which revenues based on the toll fee are shared by the telephone company or billing agent associated with the billing network and the
25 service provider, bureau and/or any agent thereof.

In various embodiments of the invention, a telephone company collects payment for the 900 calls and pays the on-line service providers a percentage of all revenues.

30 In various embodiments of the invention, methods for billing and collection for services on the Internet are provided.

Various embodiments of the invention provide for billing and collection in a computer system, where the system comprises a data network including at least one on-line service provider for on-line access by a user over a first telephone line with a user computer through the data network, a billing network including a
35 second telephone line at the user's residence or business from which access is desired, and an access management computer.

In various embodiments of the invention, the access management computer enables a user to obtain access to the on-line service provider by communicating a unique access message to the user and the on-line service provider. The access management computer may be associated with the billing network, an independent service bureau which handles shared billing between the billing network and the data network, or it may be directly associated with the on-line service provider. The access management computer includes or is associated with a database, in which are stored access messages for the various on-line service providers. Alternatively, the access management computer may generate a particular access message. The access message may be valid for a single on-line service provider or a plurality of on-line service providers, and for a single session or for a plurality of sessions.

In various embodiments of the invention, when a user reaches the "home page" of an on-line service provider, it displays a telephone number for the user to call to obtain the access message. The home page may also display a message that the cost for using this on-line service provider is xx¢ per minute or xx¢ per minute after the first x minutes or the like, or some fixed charge. In an alternative embodiment, the instructions for the user and related phone information reside in a directory, either stored in memory on the user computer or in some external medium.

In various embodiments of the invention, when the user desires access to an on-line service provider, he or she dials the 900# which routes the call through the billing network to the access management computer. The access management computer provides the access message to the user over the voice network and at the same time provides the on-line service provider with instructions to allow the user who enters that access message into the user computer to gain access to the on-line service provider for as long as the second telephone line is left open, or for some predetermined amount of time after the 900 call is terminated. When the user enters the access message into the user computer, the on-line service provider reads the access message and if the access message entered by the user matches the access message provided by the access management computer, the user is given access to the on-line service provider. When the user desires to leave the on-line service provider, the user simply terminates the connection on the second telephone line. This signals the access management computer to terminate access to the on-line service provider for the particular access message associated with this session. This arrangement separates the channels of communication between the voice network and the data network. The user is simply billed for access to the

on-line service provider by the telephone company (or billing collection agent) associated with the billing network for the toll fee calls in the usual course of telephone charges for telephone calls made on the second telephone line. The revenues based on the toll fee are shared between the telephone company (or
5 billing collection agent) and the service provider, and any service bureau or agent thereof. The billing and collection agent may be an on-line service such as America On-line, Prodigy and the like. Thus, the on-line service becomes a billing and collection agent for the on-line service provider and the telephone company.

In various embodiments of the invention, the system utilizes the 900#
10 billing network as an on-line service provider gateway. The system operates similarly to the embodiment described above, but does not require that the communications be separated between the data network and the voice network. The user computer can access the voice network and data network directly through a single telephone connection. In this connection, the user computer operates in
15 the same manner to provide access to a particular on-line service provider by enabling the same with an access message. The billing network provides for billing the user for as long as the access computer keeps the on-line service provider open for that access message, or for some predetermined amount of time. The user may then be billed a single aggregate charge for the on-line service
20 provider or on-line service providers accessed. In an alternative single communication channel embodiment, the access message may be authenticatable whereby it is generated by the user computer using known encryption protocols and is communicated to the on-line service provider through the data network whereupon it is read and authenticated (decrypted) by the on-line service provider
25 for access. In this regard, the authenticatable access message may contain user-specified limitations as to desired access time and maximum cost to be incurred for any session.

In various embodiments of the invention, credit is obtained from the billing network and charged to the user through the phone company as described above
30 with respect to the other embodiments. This credit is downloaded to the user computer and communicated to the on-line service provider over the data network. The system operates in the following manner. First, the user computer dials the 900# and connects to the access management computer. This may be done either
35 on a single telephone line which serves to connect to both the billing network and the data network, or through a second telephone line which independently communicates the user computer with the billing network for the sole purpose of obtaining credit. The user is prompted through appropriate software to enter the

amount of credit requested for on-line service provider access. The user enters the amount into the user computer, and the access management computer generates an authenticatable value token message which is based upon the amount of credit requested, an identification message of the particular on-line service requested, and possibly the 900# or the user's own telephone number or some other personal identification code. The value token message is transmitted to the user computer and stored in memory. The user then connects to the on-line service provider, which has its own computer that reads and authenticates the value token message. The authentication may take the form of encryption and decryption. The user is then provided access to the on-line service provider to the extent of available credit embodied in the value token message. The value token message may be obtained in fractional amounts if desired. In this regard, the value token message may represent a series of fractional amounts of credit (e.g., pennies, dimes or quarters) which are used by the on-line service provider to gain access for corresponding limited amounts of time. Thus, the on-line service provider would intermittently read and authenticate the value token message and allow the user continued access to the extent of any remaining credit. When all credit is exhausted, access for the user is terminated until the user goes back to the billing network and repeats the procedure. The user is billed and revenues are shared with the on-line service provider as described above with respect to the other embodiments.

Alternatively, the billing provider may be disposed on the Internet itself in the form of a dedicated billing site. The billing site serves as a gateway to all of the networked on-line service providers and regulates all billing for and access thereto. The billing site has an access management computer associated therewith that facilitates access to the on-line service providers and communicates with a billing system. The billing system bills access charges to the user's on-line service account. When a user desires to obtain access to an on-line service provider, he or she is prompted by the billing site to enter a message ID associated with the user's on-line billing account. The billing site then provides an anonymous access message to the particular on-line service provider to which access is requested. The on-line service provider may have its own computer which records the amount of time access is made available for any given session. Similarly, the access management computer at the billing site may do the same to serve as a redundant audit trail. The access management computer continuously monitors the connection. When the user desires to terminate access to the on-line service provider, the access management computer sends a termination message to the on-line service provider to terminate user access. The process may be repeated if the

user desires access to another on-line service provider. The billing site accumulates bills for all on-line service provider sessions, and then bills the user through the billing system in a conventional manner. Since the charges for various on-line service providers may vary, the billing site can bill the user a single aggregate charge for all on-line service providers accessed during any given period of time, even if the individual charges differ among all of the on-line service providers.

In various embodiments of the invention, the on-line service provider may download software in lieu of information to the user computer.

The method and apparatus of the preferred embodiments of the invention will now be described with reference to FIGS. 1-6. In a preferred embodiment, the invention generally comprises an end-user system 300, data network 400, access management system 500, and 900-number network 600. The present invention allows information providers on a data network to control access to information using a system of codes, where the 900-number system functions as the billing agent. This enables an information provider to simply and economically bill in small, incremental amounts for the information provided.

System Architecture

With reference to FIGS. 1-6, the system architecture for a first embodiment of the invention is illustrated. As shown in FIG. 1, the overall system comprises an end-user system 300, data network 400, access management system 500, and 900-number network 600. Access management system 500 regulates access to data network 400 and manages the billing for such access by facilitating communications between 900-number network 600, data network 400, and end-user system 300.

FIG. 2 generally depicts the flow of information among the primary components in greater detail. The end-user accesses data network 400 through user computer 310 and modem 390, and communicates with 900-number network 600 through telephone 395 over a standard telephone connection. In this regard, those skilled in the art will appreciate that dedicated data lines, cellular telephones, Personal Communication Systems ("PCS"), microwave links, satellite systems, or any other direct or indirect communication link may alternatively be used. The overall system facilitates the purchase of information 450 on a data network 400 by linking 900-number calls to the activation of codes necessary to retrieve the information 450.

Referring now to FIG. 3, there is shown a block diagram of user system 300. The end-user communicates with data network 400 via end-user computer 310, which is preferably a conventional personal computer having a CPU 320, input device 325 (e.g. a keyboard or mouse), one or more communication ports 330, clock 340, video driver 345 connected to video monitor 350, secure processor 355, RAM 360, ROM 365, and data storage device 370. Data storage device 370 may be either fixed media (e.g., a hard disk) or a drive capable of reading removable media (e.g., a floppy disk or CD-ROM). Data storage device 370 may contain information storage 375, which is used for storing information 450 retrieved from data network 400. Additionally, an audit trail for information transactions may also be saved in audit database 380. The audit trail can include a record of all information purchases as well as any codes used during the process. This audit trail is useful in the event of a disputed charge or disputed bill. Secure storage 377 is used for any embodiment requiring secure storage of messages or data at end-user computer 310. End user computer 310 communicates with data network 400 through communications port 330 and modem 390 (or other communication device such as a network card or a transmitter) to enable direct communications with data network 400.

FIG. 4 is a representative block diagram of the structure of data network 400, which is comprised of at least one information provider 410. In one embodiment, data network 400 is the World Wide Web, with web pages representing the various information providers 410. Data network 400 may have a dedicated communications channel or data communications link with access management computer 510 or 900 number network (billing network) 600. For a given information provider 410 there is at least one index of information 420 which permits users to quickly find information 450. Much like the table of contents of a journal, an index of information 420 might list articles by topic, providing the author, price, size of file, etc. A web page specializing in chess game databases, for example, might list the names of ten chess grandmasters along with the number of games in each database and the price for the information. Free samples of the information may be included in the index of information 420. Each chess game database might have two or three games provided free in order to give a potential purchaser a better idea of the information that is being sold. In addition to indexes of information 420, some sites may have indexes of products 425 that describe goods available for sale. In the case of the chess site, the index of products 425 might list chess books.

To obtain access to information 450, the end-user must pass through information barrier 430. Information barrier 430 acts as a "toll-booth" at information provider 410, and is analogous to password screens that require a valid password to be inputted to obtain access to a computer. If the proper code is entered, access is granted; otherwise the barrier remains in place. Information barrier 430 determines whether the code is valid by communicating with access management computer 510 over an open channel of communication as described below.

In another embodiment, information barrier 430 itself may contain a code generator capable of issuing codes directly to the end-user, thus eliminating some of the communication between information barrier 430 and access management computer 510. This code generator either retrieves a predetermined code from a database or generates random codes. These codes may then be transmitted to access management computer 510 for validation. In yet another embodiment, information barrier 430 accepts digital "tokens" in exchange for access to information 450.

FIG. 5 is a block diagram depicting access management system 500. This system manages the communications between data network 400 and 900-number network 600. Access management computer 510 could be a conventional mainframe computer, workstation, or personal computer depending upon the volume of transactions expected to be handled by the system. Access management computer 510 includes CPU 520, communications port 530, clock 540, operating system 545, secure processor 555, RAM 560, ROM 565, and data storage device 570. For high volume transaction processing a relatively powerful microprocessor that has a wide data bus may be used as CPU 520. Typical of such processors are the Intel Pentium or the Motorola PowerPC 604, which both employ a 32-bit data bus. The storage device can be either fixed media (e.g., a hard disk) or a drive capable of reading removable media (e.g., a floppy disk or CD-ROM). Data storage device 570 is used to store the various databases needed in the system, such as the code databases that track the codes necessary to manage the information purchase process. The code databases include a session code database 575 and purchase code database 577. Other stored databases include a billing record database 580, token database 582, ANI database 584, and activation query database 586. Those skilled in the art will understand that each of the databases may be relational to one another, or that all of them may be combined into a single large database.

Session and purchase codes are generally described as a unique series of digits, either retrieved from a database of predetermined codes or generated at random, used to purchase information 450 or physical goods 40. Those skilled in the art will understand that there are some variations to the structure of the codes in each embodiment of the invention and they can range from a simple series of random digits to long strings or groups of digits. Optionally, each group of digits may represent a number of pieces of information including, but not limited to, cost, product description, originating ANI, time/date, server ID number, etc. The uniqueness of codes allows a high level of security. The code can be limited to one-time access, making the broadcasting on the web of a lost or stolen code useless. Thus, only the first user is able to use the code, subsequent users of the same code will be denied access. This uniqueness of codes also assures an easy and reliable method for auditing of the 900-number service provider.

Session code database 575 stores codes used to purchase information 450. To activate the codes, the end-user calls 900-number network GOO and enters the requested code, which is then processed by access management computer 510.

Purchase code database 577 stores codes used by the end-user in the physical goods purchasing embodiment. The end-user calls 900-number provider computer 610 and enters the requested code. The 900-number provider computer 610 transmits this code to access management computer 510. These codes are then transmitted to information provider 410 to authorize fulfillment.

Billing record database 580 stores a copy of each active session code 60 and active purchase code 80. This database provides both an audit trail for all transactions and a cross-reference for the accounting of LEC charges and commissions due information providers.

Token database 582 is the repository for tokens used by the end-user for the purchase of information or physical goods 40.

ANI database 584 stores all end-user telephone number information and is closely tied to billing record database 580.

Activation query database 586 stores the queries used to determine whether or not the end-user is currently connected to 900-number network 600.

Communication port 530 allows access management computer 510 to communicate with data network 400 and 900-number provider computer 610. Communication with 900-number provider computer 610 also involves conventional interactive voice response unit (IVRU) 590. IVRUs are well known in the art (see, e.g., Jerry Fitzgerald, Business Data Communications -Basic Concepts, Security & Design, 4th ed., John Wiley & Sons, 1993) and need not be

described in detail here. IVRU 590 allows the end-user and access management system 500 to interface directly over the public switched telephone network.

Referring now to FIG. 6, there is shown a block diagram of 900-number network 600. This network includes a 900-number provider computer 610 that handles most of the call tracking and billing functions. 900-number computer 610 includes a CPU 620, communication port 630, clock 640, payment/collection database 650, call record database 660, and ROM 665. Communication port 630 is connected to router 670, enabling communication with access management computer 510. Billing information from 900-number provider computer 610 is transmitted to local exchange computer 675, which uses LEC bill printer 680 to generate the end-user's monthly phone bill 695. The LEC distribution channel 685 distributes phone bill 695, which generates a payment by the end-user. This payment is sent to the LEC collection system 690 and then back to the local exchange computer 675.

Dedicated communications links may be established between access management computer 510, data network 400, and 900 number network 600. Although these systems are described as being located remotely from one another, one or more of the systems may be located within the same location.

Asynchronous Embodiment

Referring now to FIG. 7, there is shown an exemplary embodiment for the purchase of information in which accessing the information and billing (or tolling) for accessing the information occur asynchronously (i.e., at different times). FIG. 7 describes the first of a three-part process in which the end-user finds the information, makes payment by calling the 900-number, and then returns to data network 400 to collect information 450. This procedure may be performed with the use of a single telephone line or multiple telephone lines.

At step 700 the end-user logs on to data network 400. Data network 400 may be the Internet, World Wide Web, Bulletin Board Service, or any other electronic network. As described previously, data network 400 encompasses at least one information provider 410. After the end-user reaches information provider 410, he reviews indices of information 420 at step 705 and locates information 450 that he would like to purchase. Indices of information 420 are similar to the table of contents of a book, in which chapter and sub-chapter headings provide an indication of the information to follow. Indices of information 420 may also contain short excerpts from information 450.

After finding information 450 to purchase, the end-user selects information 450 for viewing or downloading. The end-user, for example, might select a chocolate chip cookie recipe from a list of dessert recipes. Before information 450 (the cookie recipe) is made available, however, the end-user is presented with information barrier 430 at step 710. Information barrier 430 is software which requests that the end-user enter a valid code to obtain access to information 450; it is similar to data security software which denies access to a network without the proper password. There is no way to access information 450 without providing the correct access code to information barrier 430. At step 715, information barrier 430 provides a dialog box displaying a place to enter session code 50 (an access code) along with instructions for obtaining session code 50. If the end-user does not yet have session code 50 at evaluative step 720, information barrier 430 requests session code 50 from access management computer 510 at step 730.

Access management computer 510 retrieves session code 50 from session code database 575 at step 735. Session code database 575 has three fields --code, status, and price data. The code field stores session codes 50 with one database record for each session code 50. Each session code 50 is a string of digits or letters. These digits may be randomly generated or developed by code generation algorithms such as the algorithms for generating credit card numbers. Alternatively, session codes may be sequential numbers. After being created and stored in session code database 575, each session code 50 is assigned a status. The status field has values of "unassigned," "pending," "active," and "completed." When a session code 50 having a status of "unassigned" has been sent to information barrier 430, its status is changed to "pending." After session code 50 is activated by the end-user the status is changed to "active." The status of session code 50 is changed to "completed" after the end-user has gained access to information 450. Each session code 50 also has corresponding pricing data that indicates the cost of information 450 purchased through the use of session code 50. This pricing data is updated by information barrier 430 after the end-user has selected information 450 to purchase, described at step 935.

At step 740, access management computer 510 changes the status of one session code 50 to "pending" and transmits it to information barrier 430 at step 745. Information barrier 430 displays session code 50 in a dialog box on video monitor 350 of end-user computer 310 at step 750. This dialog box provides instructions for activating session code 50, which the end-user writes down at step 755.

If the end-user already has session code 50 (i.e. he has already called the 900-number to activate it) and enters it at information barrier 430, at step 725 a search of session code database 575 is performed at access management computer 510 to check the status of session code 50 to verify that its status is "active" as described at step 915 of FIG. 9.

Referring now to FIG. 8, there is shown an exemplary embodiment for the billing procedure associated with granting access to information in the asynchronous embodiment of the present invention. This is the second step of the three-part process. The end-user calls the 900-number and connects with IVRU 590 of 900-number network 600.

At step 800 the end-user dials the 900-number provided by information barrier 430 and enters session code 50 using the touch tone keys of telephone 395 at step 805. 900-number network 600 then transmits session code 50 to access management computer 510 at step 810, and stores a copy of session code 50 along with the billing information of the call so that pricing data received from access management computer 510 may be matched with the particular call record. At step 815, access management computer 510 searches session code database 575 to determine whether session code 50 is present. If it is, the status field of the database record for session code 50 is changed to "active" at step 825. IVRU 590 then reads a confirmation message to the end-user at step 830 and instructs him to disconnect the 900-number call and return to information barrier 430 from which session code 50 was obtained. At step 835, the end-user hangs up the phone, disconnecting from 900-number network 600. If the search at step 815 reveals no matching session code 50 in session code database 575, the end-user is instructed to check the entered session code 50 and re-enter it, or return to information barrier 430 for a new session code 50 as described at step 805.

FIG. 9 illustrates an exemplary procedure for providing access to information 450 after access management computer 510 verifies that session code 50 entered by the end-user at information barrier 430 corresponds to session code 50 entered by the end user at IVRU 590 of billing system 600. At step 900, the end-user logs on to data network 400, navigates to information barrier 430 and enters session code 50. Like a department store checking the validity of a credit card by contacting a central clearinghouse, information barrier 430 contacts access management computer 510 to verify that the status of session code 50 is "active", transmitting session code 50 and pricing data (pricing information) to access management computer 510 at step 905. Access management computer 510 then searches session code database 575 at step 910 to determine whether session code

50 exists, and to check its status. This search is preferably done by CPU 520 of access management computer 510, as an alphanumeric compare searching for an identical session code 50, followed by the status check. If an identical session code 50 is found having the correct status, the first and second session codes 50 are said
5 to correspond.

If, at step 920, session code 50 is not found in session code database 575 (or its status is not "active"), then access management computer 510 has not found a corresponding session code 50 received from 900-number network 600. Access management computer 510 then communicates a message to information barrier
10 430 indicating that the end-user should not be provided access to information 450. The end-user returns to step 715 at which point he is requested to enter another session code 50.

If session code 50 is found in session code database 575 and its status is "active", session code 50 is communicated back to information barrier 430 to
15 verify that two corresponding session codes 50 have been received. This correspondence of two session codes 50 indicates that the session code is valid and that the end-user should be authorized access to information 450 at step 925.

At step 935, access management computer 510 adds the pricing data to the pricing data field of session code 50 of session code database 575 and then
20 transfers this data to a billing record at billing record database 580. This billing information contains the end-user phone number, 900-number, time of call, date of call, length of call, price, etc. At step 940, this billing information is sent to Local Exchange Carrier (LEC) computer 675, authorizing LEC computer 675 to post an access charge to the end-user's account where it shows up on his monthly phone
25 bill 675. Access management computer 510 then searches session code database 575 to change the status of session code 50 to "completed" at step 945. An end-user activating a session code, but not using it, will of course not generate the pricing data sent to LEC computer 675 at step 940. Access management computer 510 may send a nominal charge to LEC computer 675 in order to cover transport
30 charges of the 900-number call used to activate session code 50.

The above embodiment describes session codes 50 generated at access management computer 510, transmitted to information barrier 430, provided to the end-user, and entered into 900-number network 600. Those skilled in the art will appreciate that session code 50 can be transmitted directly from access
35 management computer 510 to 900-number network 600. After reaching information barrier 430, the end-user is instructed to call 900-number network 600

to receive session code 50. This code is then entered at information barrier 430 where it is verified by access management computer 510 as previously described.

In another embodiment, session code database 575 contains fields in addition to code, status, and pricing data. Such fields may include remaining uses, dollar value remaining, expiration date, start date, time remaining, valid information providers, valid information, etc. The remaining uses field is an integer indicating the number of times that session code 50 may be used before its status is changed to "completed" while the dollar value remaining field contains a dollar amount which is reduced as information 450 is purchased. A field for expiration date allows session codes 50 to expire on a given date while a field for start date allows session codes 50 to remain unusable (status of "pending") until a given date, regardless of whether or not the end-user has called the 900-number to activate session code 50. A test field for valid information providers enables session codes 50 to be designated for a particular information provider 410. Attempts to use session code 50 at another information provider 410 are denied. A field for valid information is used to restrict information 450 purchases to a class of information 450 (such as education, business, etc.) or to a particular piece of information 450.

In another embodiment, information barrier 430 contains a database capable of storing session codes 50. Instead of requesting session code 50 from access management computer 510, information barrier 430 changes the status of one session code 50 to "pending" and provides it to the end-user. After billing network 600 transmits session code 50 to access management computer 510 the code is transmitted back to information barrier 430, thereby allowing information barrier 430 to perform a local look-up of session code 50 provided by the end-user.

In yet another embodiment, end-user computer 310 contains secure processor 355 and secure storage 377 capable of storing session code database 575. Conventional secure tokens such as National Semiconductor's iPower Card can perform both functions. Secure processor 355 is used to process communications with data network 400 and billing network 600, while secure storage 377 stores session code database 575. When the end-user logs on to data network 400, secure processor 355 is treated as access management computer 510. Information barrier 430 requests session code 50 from secure processor 355, which in turn searches session code database 575 within secure storage 377. After calling 900-number network 600, the end-user types in session code 50 into secure storage 377 (with the use of a separate code provided by 900-number network 600) where its status is changed to "active." When the end-user logs on to data network 400 and reaches

information barrier 430, information barrier 430 queries secure processor 355 to see if session code 50 is “active.” Pricing data is then transferred to 900 number network 600.

In all of the above embodiments, all messages transmitted (including session codes 50 and pricing data) between data network 400, access management system 500, and 900-number network 600 may be encrypted for additional security. Secure processor 555 of access management computer 510 serves to encrypt and decrypt such messages.

Synchronous Embodiment

Referring now to FIG. 10A, there is depicted an exemplary embodiment of a single line synchronous access protocol of the present invention. This embodiment requires the user to access data network 400 through 900-number network 600, using 900-number network 600 as a gateway. Access management computer 510 allows continued access to data network 400 as long as the end-user is connected to 900-number network 600. At step 1000, the end-user logs on to 900-number network 600 which immediately opens a 900-number billing record at step 1002. This record might indicate that phone number xxx-555-1212 opened a call at, for example, 7:52 PM on May 7, 1996. The communications channel is then continued to access management computer 510 at step 1004. Automatic Number Identification (ANI) systems automatically capture the phone number of the end-user, storing it at step 1006 in ANI database 584. If ANI data is not available, the end-user is denied access. At step 1008, the end-user chooses a short series of digits or letters, which are then concatenated with the ANI data to form session code 50. Since ANI data is unique to each individual phone line, the resulting concatenated session code 50 must also be unique.

At step 1010, the communication link is established to data network 400. After locating desired information 450, the end-user proceeds to the appropriate information barrier 430 at step 1012. At step 1014, the end-user enters session code 50 that he previously provided to access management computer 510 at step 1008. At step 1016, information barrier 430 queries active session code database 575 at access management computer 510 in order to determine whether or not session code 50 is still in session code database 575. CPU 520 of the access management computer 510 performs a database search of session code database 575 at step 1018, denying access to information 450 at step 1020 if session code 50 is not “active.” If session code 50 is in session code database 575, access management computer 510 extracts pricing information from the activation query

at step 1022. At step 1024, the price is appended to billing record database 580. At step 1026, access management computer 510 authorizes information barrier 430, indicating that the end-user should now be allowed access to information 450. After information 450 is communicated, the end-user hangs up the phone at step 1028. Access management computer 510 adds the charges for accessed data to the current session total at step 1030 and then sends the amount to LEC computer 675 at step 1032. The end-user may also choose not to terminate the call, proceeding to another information barrier 430 for additional information 450.

Access management computer 510 monitors, either continuously or at fixed-time intervals, the ANI information provided by 900-number network 600. When the ANI is no longer presented by 900-number network 600, access management computer 510 denies access through information barrier 430 by deleting session code 50 from session code database 575.

FIGS. 10B and 10C illustrate another synchronous embodiment in which the end-user simultaneously accesses both data network 400 and billing system 600. Unlike the previous embodiment, however, the end-user employs two separate lines of communication.

Referring now to FIG. 10B, there is shown the process by which the end-user establishes an "active" session code 50. At step 1034 the end-user logs on to data network 400 and reviews indices of information 420 at step 1036. At step 1038 the end-user accesses information barrier 430. Then, at step 1040, the end-user is presented with a screen requesting that session code 50 be entered. As the end-user has not yet activated session code 50, he is unable to enter it at step 1042. Once the end-user activates session code 50 and enters it at step 1042, he proceeds to step 1058 as indicated at step 1044.

At step 1046, the end-user is instructed to select a session PIN and enter his telephone number. At step 1048, information barrier 430 transmits the entered session PIN, telephone number, and pricing data to access management computer 510. At step 1050, access management computer 510 combines ANI and session PIN to form session code 50. Access management computer 510 then changes the status of session code 50 to "pending" in session code database 575 at step 1052. At step 1054, the end-user logs on to billing network 600 over the second communications line and enters his session PIN. At step 1056, billing network 600 transmits session PIN and ANI to access management computer 510, where a search is performed to find session code 50 in session code database 575 at step 1058. If session code 50 is found to be active at step 1060, the end-user continues to step 1072 as indicated by step 1062. If the code is not found to be "active" at

step 1060, it is checked to see if the code is “completed” at step 1064. If “completed”, the protocol returns to step 1046 as indicated at step 1066. If the status of session code 50 is not “completed,” access management computer 510 changes the status of session code 50 to “active” at step 1068. At step 1070, access management computer 510 transmits session code 50 to information barrier 430 allowing the end-user access to information 450 at step 1072. If the end-user wants additional information 450 at step 1074, he proceeds to access information barrier 430 at step 1038, as indicated at step 1076.

If the end-user does not want more information at step 1074, he is disconnected from billing network 600 at step 1078 with the disconnect signal transmitted to access management computer 510. At step 1080, access management computer 510 changes the status of session code 50 to “completed” and adds a record to billing record database 580 at step 1082. At step 1084, the billing record is sent to billing network 600.

Limited Use Codes Embodiment

Referring now to FIG. 11, there is shown an exemplary procedure for permitting a user access to information for a fixed number of times. A session code 50 is used which expires after a predetermined number of uses for the purchase of information 450.

As previously described, the end-user logs on to data network 400 at step 1100, reviews indices of information 420 at step 1105, and then accesses information barrier 430 at step 1110. At step 1115, the end-user is requested to enter session code 50. As the end-user does not yet have session code 50 at step 1120, the end-user is requested to enter the number of uses that he wants, and is instructed to call the displayed 900-number at step 1125 in order to receive session code 50. Information barrier 430 sends a request to access management computer 510, instructing it to change the status of session code 50 to “pending” and change the number of uses to the number requested by the end-user. At step 1130, 900-number network 600 requests session code 50 from access management computer 510. At step 1135, session code 50 is provided to the end-user who logs on to data network 400 and returns to step 1120 where he enters session code 50 at information barrier 430. Session code 50 is then transmitted along with pricing data to access management computer 510 at step 1140. Access management computer 510 performs a search of session code database 575 and retrieves the record for session code 50, checking the number of uses remaining at step 1145. If more than one use is indicated at step 1150, access management computer 510

decrements the number of uses by one and transmits session code 50 back to information barrier 430 at step 1155. The end-user is allowed access to information 450 at step 1160 and then proceeds to information barrier 430 at step 1110 if additional information 450 is desired. If the database record for session code 50 indicates no uses remaining at step 1150, access management computer 510 transmits pricing data to 900-number network 600.

In an alternative embodiment, session code 50 is valid for a given amount of time. Instead of determining the number of uses remaining at step 1145, access management computer 510 checks the time remaining field of session code 50, decrementing it by the time used in accessing information 450 at step 1155. In this embodiment, the end-user could be charged by the minute for watching part of a digital video, for example, with the number of minutes watched decremented from session code 50.

Physical Goods Purchase Embodiment

FIG. 12 illustrates an embodiment for purchasing physical goods 40 with the present invention. The end-user logs on to data network 400 at step 1200 and reviews indices of products 425 at step 1205. This information is presented in a format similar to mail order catalogs, with a brief product description and price. An image or sound file may provide additional information. At step 1210, the end-user selects a product that he wishes to buy, triggering the appearance of product order form 75, which contains purchase code 70. The end-user is prompted to enter shipping address information into product order form 75 at step 1215. Purchase code 70 is created by information provider 410 and made available to the end-user by displaying it on video monitor 350 of end-user computer 310 at step 1220. At step 1225, purchase code 70 is stored in a database at information provider 410 so that it can be matched later with purchase code 70 returned from 900-number network 600. Product order form 75 is stored in the same database at information provider 410. Note that there is no need for information barrier 430 since there is no information 450 to which the end-user is denied access.

At step 1230, purchase code 70 is transmitted to access management computer 510. At step 1235, purchase code 70 is sent to 900-number provider computer 610 by access management computer 510. The end-user calls the 900-number at step 1240 and is connected to IVRU 590 which then prompts the end-user to confirm the purchase at step 1245 by entering purchase code 70 at step 1250. Purchase code 70 is then transmitted to access management computer 510 at step 1255, allowing confirmation of the presence of purchase code 70 in purchase

code database 577. If purchase code 70 is present, access management computer 510 transmits purchase code 70 to information provider 410 at step 1260. If purchase code 70 is not found in purchase code database 577, the end-user is asked to re-enter purchase code 70. Once purchase code 70 is received by information provider 410, it is matched with stored purchase code 70 of product order form 75 at step 1265. If the two purchase codes 70 correspond to each other (i.e. they match), physical goods 40 are shipped to the end-user at step 1270. Contemporaneous with the transmission of purchase code 70 at step 1255, access management computer 510 sends pricing data to 900-number network 600 at step 1275. This billing information is then sent to the LEC at step 1280.

Digital Tokens Embodiment

As shown in FIG. 13, there is illustrated a procedure for the use of digital tokens for the purchase of information 450. Rather than receiving session codes generated for the purchase of a specific piece of information 450, tokens offer a more generic method for purchasing information 450. The end-user logs on to data network 400 at step 1310, reviews indices of information 420 at step 1320, and then accesses information barrier 430 at step 1330. Information barrier 430 requires that the end-user enter a valid token 95 at step 1340 in order to gain access to information 450. At step 1350, information barrier 430 determines whether or not the end-user has entered token 95. If he has not entered token 95, he is instructed to call a 900-number at step 1360. After calling the 900-number at step 1370, the end-user receives token 95 and proceeds again to information barrier 430 at which point he enters token 95. If the user has entered a valid token, he is granted access to information 450 at step 1380. At this point a message is sent to access management computer 510 to decrement the token account for the cost of the information 450.

Off-Line Digital Information Purchase Embodiment

In one embodiment of the present invention, digital information is sold directly through billing network 600. The end-user dials a 900-number and connects to IVRU 590. He is presented with a menu of information 450 that may be purchased, much like an audio version of index of information 420. Information 450 to be purchased may include anything in audio form. Electronic tickets, for example, could be sold with this system. A concert could sell unique digital codes that are validated upon presentation at the concert. The end-user presents the code upon arrival at the concert. Concert management calls the 900-number provider to

verify that the code provided by the end-user had indeed been sold. Revenues from the 900-number call are shared with concert management. In another example, electronic tickets to on-line or off-line games are sold with the inventive system. Entry fees to trivia tournaments held on a commercial on-line service provider can be represented by unique digital codes, sold via a call to a 900-number. Similarly, games played on handheld electronic devices may be enabled to accept digital codes sold through a 900-number phone call. Data can also be distributed on CD-ROM in encrypted form, with end-users calling a 900-number to receive cryptographic codes capable of decrypting information 450 stored on the CD-ROM.

In alternative embodiment, the end-user uses a local printer to print tickets for entertainment events like concerts or sporting events. DTMF tones generated by the call to the 900-number transmit information 450 to the local printer. Those skilled in the art will understand that this printing device may be a small handheld device specifically adapted for the purpose of printing tickets, or a printer attached to a PC which utilizes a local software program that enables the tickets to be printed. For example, an end-user observes an advertisement for a Rolling Stones concert and would like to purchase a ticket. The end-user dials a 900-number and is connected to an IVRU, which directs him through a series of questions relating to concert dates, quantity and seat selection. The IVRU has a list of currently available seats on file, allowing the end-user a variety of custom choices. The end-user selects from the list of available seats and completes the order for the ticket(s). The IVRU then downloads ticket data via DTMF tones or issues a code for the end-user to enter into the ticket printing device. The appropriate ticket prints and is available for immediate use.

Billing Embodiment

FIG. 14 illustrates one embodiment of the operational aspects of the billing system in which pricing data is incorporated into session code 50, describing how the price of information 450 is incorporated into phone bill 695 which the end-user receives at the end of the month. For information about 900-number billing and collection systems, one of ordinary skill in the art may refer to Robert Mastin, 900 Know-how: How to Succeed With Your Own 900 Number Business, Aegis Publishing Group, 1995 or AT&T's FCC Tariff No. 1.

At step 1410, the end-user dials the 900-number. At step 1415, 900-number network 600 routes the call to IVRU 590. The end-user enters session code 50 or session PIN at step 1420, using the touch-tone keys of his phone. At

step 1425, this code is sent to access management computer 510 where it is compared with session codes 50 stored in session code database 575. At step 1430, IVRU 590 communicates a confirmation message that includes session code 50 and further instructions to the end-user. The end-user disconnects at step 1435 and then logs on to data network 400 to access information 450 at step 1440. While the end-user was still connected to 900-number network 600, information about the call was being recorded at step 1445. At step 1450, the system monitors for session code 50, extracting pricing information that is added to the call record at step 1455. At step 1460, the call is priced based on session code 50 entered. At step 1465, 900-number network 600 sends the billing information to the local exchange company (LEC).

Referring now to FIG. 15, there is depicted a procedure for LEC billing and collection. At step 1510, the end-user pays the LEC for charges that have appeared on his monthly phone bill 695. After collecting the money for all 900 calls at step 1520, the LEC sorts the call records and makes payment to access management computer 510 at step 1530, sharing the 900-number revenues between billing system 600 and access management system 500. At step 1540, access management system 500 then pays information providers 410 for the content provided.

With reference to the several views of the drawings, there are depicted several embodiments of a parallel billing and collection system in accordance with the present invention.

Referring now to FIG. 16, there is depicted a block diagram of a first principal embodiment of the system generally referred to by the reference numeral 1610. System 1610 includes an access management computer 1612, which communicates via a suitable connection 1614 with a telephone network 1616. The telephone network 1616 is connected to a data network 1618 (the "Internet"), and includes or is connected to a billing network 1619. In this regard, the telephone network 1616 may be comprised of a plurality of individual networks, where the Internet 1618 and billing network 1619 communicate with the user through different telephone companies. The Internet is made up of a plurality of on-line service providers 1627. The operation of on-line services is well known and need not be described here in detail. The telephone network 1616 is accessed by a user computer 1622 through typical hardware such as a modem 1624 over a first telephone line 1626. Only one user computer 1622 is shown for the purpose of illustration, but the Internet 1618 is accessible to a large numbers of individual users. Each user requires a telephone 1628 which communicates with the telephone network 1616 and the billing network 1619 over a second telephone line

1630 which is separate and apart from the first telephone line 1626 and allows calls to be placed to the access management computer 1612 to facilitate access to the on-line service providers 1627 as described below. The combination of the user computer 1622 and telephone 1628 may be collectively referred to as the user site
5 1621. Here again, only one telephone 1628 is depicted for the sake of clarity. Of course, it is anticipated that the user computer 1622 itself could dial the billing network 1619 over the second telephone line 1630, if the user computer 1622 is set up to accommodate parallel lines of communication. Another embodiment where the user computer 1622 communicates through a single line of communication is
10 discussed below and illustrated in FIG. 19.

Referring again to FIG. 16, the system 1610 utilizes a first channel of communication to communicate information through the Internet 1618 and a second channel of communication, the billing network 1619, to facilitate billing for the information service provided. The billing network 1619 includes a 900#-type
15 shared revenue toll fee or premium charge network 1632 which automatically charges a prescribed toll fee or charge to the calling party each time a call is made through the toll fee network. Such toll fee numbers are typically used to provide specific information or services for a given caller, e.g., stock prices, weather, travel information, and the like. For the purposes of the present invention, the use of the
20 term "900#", identified by the reference numeral 1635, is not limited to the use of a "900" toll fee network, but may encompass any toll fee or premium charge network that automatically charges a prescribed toll fee which is shared between the on-line service provider 1627 (and any service bureau or agent associated therewith) and the telephone company (and any billing agent) each time the toll fee
25 network 1632 is accessed. Since some users may wish to have access from a business where 900 calls are blocked, charges may be incurred in connection with, for example, an 800 line as long as the user knows what the charges are for. The prescribed toll fee may be assessed on a per-minute basis, on a combination of fee levels for different amounts of time (i.e., xx¢ per minute or xx¢ per minute after
30 the first x minutes or the like), or a flat fee charge. A toll fee log 1633 keeps track of the numbers 1635 called. This information is input to a billing system 1634, so that the company that manages the billing network can periodically bill the callers who use the 900#.

As shown in the block diagram of FIGS. 17A, 17B, 17C and 17D, the user
35 first logs-on to the Internet 1618 in the customary manner on the user computer 1622 over the first telephone line 1626. The user selects an on-line service provider 1627 containing an information service that he or she wishes to browse.

In one embodiment of the invention, the home page 1629 of the on-line service provider 1627 displays instructions for the user to follow to access the on-line service provider 1627. These require that the user call a 900# 1635 for which they will be charged, e.g., xx¢ per minute, some flat fee or combination thereof. The user then calls the 900# 1635 on telephone 1628, which call is communicated over the second telephone line 1630 and through the billing network of the telephone network 1616 to the access management computer 1612.

The term "access management computer" is used in a general sense. The access management computer 1612 may actually comprise a plurality of computers that are coupled together through an appropriate network, e.g., a local area network (LAN). The access management computer 1612 also communicates through the telephone network 1616 with the Internet 1618 (and thus the on-line service providers 1627). When the user calls the 900# 1635, the call is routed to the access management computer 1612. The user transmits an on-line service identification message 1629 through the telephone 1628 and the second telephone line 1630, which causes the access management computer 1612 to provide a unique access message 1639 for the service being accessed. The access message 1639 is either generated by the access management computer 1612 or retrieved from a database 1640. The user is prompted on the home page 1629 of the on-line service provider 1627 to enter the access message 1639 into the user computer 1622. The access management computer 1612 uses the access message 1639 to enable access to the on-line service provider, by transmitting the access message 1639 to the Internet 1618 to make the on-line service provider 1627 available for browsing by the specific user who enters the same access message 1639 into the user computer 1622. In one embodiment, the user receives information from the on-line service provider 1627 for as long as desired, and the costs associated therewith are incurred through the toll fee log 1633 and billed to the user via the billing system 1634 in accordance with conventional practice. The toll fee log 1633 computes the fee as a function of the length of time of the 900 telephone call. The user terminates access to the on-line service provider by simply hanging up the telephone 1628. The access management computer 1612 knows which call has been terminated by checking the corresponding access message 1639 for the particular on-line service provider 1627 being accessed. Thus, when the call is ended, the access management computer 1612 generates a termination message 1643 and communicates the same to the on-line service 1618, where it is processed to end access to the on-line service provider 1627.

In an alternative embodiment, the user need not keep the second telephone line 1630 open. After the user places a 900 call as described above, the access management computer 1612 similarly generates or retrieves an access message 1641 for the on-line service provider 1627 to enable the information requested to be downloaded over the Internet and through the first telephone line 1626 to the user computer 1622, or to allow limited access to the on-line service provider 1627 for some predetermined amount of time. The usage charge for the information at the on-line service provider is incurred in connection with the 900 call on some established fee basis (fixed, variable or the like). Here again, the cost for obtaining the information from the on-line service becomes linked to the user's phone bill. In this regard, it is also anticipated that software, in addition to or in lieu of information, could be downloaded to the user computer 1622 in the same fashion.

The main advantage provided by these embodiments of the present invention is the separation through parallel communication channels of the flow of money from the flow of information through the computer network, enabling small billing charges for access to the on-line service providers 1627 to be collected by a billing network or service bureau which then shares a percentage of the collected revenues with the on-line service providers 1627. Another advantage realized by billing for services on the Internet 1618 in this fashion, is the elimination of the risk of an unauthorized party obtaining access to a user's credit card number or information regarding the form of payment. The user is simply billed for the 900 call(s) in his or her monthly telephone statement. The information transaction is made easier and less time consuming, and overall billing costs are reduced.

In accordance with the foregoing description, the present invention contemplates a method for billing and collection in a system for enabling shared revenues between an on-line service provider 1627 over a data network 1618 and a separate billing network 1619 by billing a customer for a separate telephone connection over a second telephone line 1630 through the billing network 1619 where the telephone connection on the second telephone line 1630 regulates access to the on-line service provider 1627 over the data network 1618 on the first telephone line 1626 comprising: a data network 1618 including at least one user on-line service provider 1627 presenting at least one service for on-line access by a user over a first telephone line 1626 with a user computer 1622 through the data network 1618; a billing network 1619 accessible through the second telephone line 1630; and an access management computer 1612 for controlling access to the on-line service provider 1627 by at least one of generating, and retrieving from a

database 1640, an access message 1639 in response to a telephone connection over the second telephone line 1630, comprising the steps of:

(a) connecting the user computer 1622 to the data network 1618 over the first telephone line 1626 to reach an on-line service provider 1627;

(b) calling a 900-type shared revenue telephone number 1635 over the second telephone line 1630 through the billing network 1619 to establish a telephone connection to the access management computer 1612;

(c) at least one of generating and retrieving from a database 1640, an access message 1639 with the access management computer 1612 and communicating the access message 1639 to at least one of the user and the on-line service provider 1627;

(d) enabling access to the on-line service provider 1627 for the user on the user computer 1622 upon receipt of the access message 1639 by said on-line service provider from the access management computer 1612;

(e) communicating information (or software) from the on-line service provider 1627 to the user computer 1622; and

(f) generating a billing charge for the telephone connection on the second telephone line 1630, billing the user in connection with the toll fee for the 900 call and sharing revenues between the telephone company (or its billing agent) and the on-line service provider 1627 (and any service bureau or agent associated therewith).

In one embodiment, the telephone connection on the second telephone line 1630 is terminated when the user wishes to leave the on-line service provider 1627 to cause the access management computer 1612 to terminate access to the on-line service provider 1627. Alternatively, the method involves terminating the 900 call immediately after obtaining the access message 1639, which access message 1639 enables access to the on-line service provider 1627 for some predetermined amount of time, either for communicating certain information, or for downloading software to the user computer 1622.

Referring now to FIG. 19, there is depicted a second principal embodiment 1910 of the invention where the data network and billing network function essentially as a single entity. The billing network 1919 thus serves as an on-line service provider gateway. In this regard, the user computer 1922 communicates over a single telephone line 1926 with the telephone network and obtains access to the Internet 1918 by dialing the 900# 1935. When access to a specific on-line service provider is desired, the access management computer generates or retrieves an access message 1939 as described above. This access message 1939 is

communicated to the on-line service provider 1927 to enable access to the on-line service provider 1927 for the user. The access management computer 1912 also sends the access message 1939 to the billing network 19 to enable a billing charge to be made in connection with opening the on-line service provider 1927 for the user. Here again, the billing network 1919 can generate a fixed charge for the particular session, or can generate a per-minute or incremental charge based upon the amount of time that the user spends browsing the on-line service provider. When the user desires to end a session, he or she leaves the on-line service provider 1927 by following instructions associated with the on-line service provider 1927, causing the on-line service provider 1927 to either send a termination message 1941 to the access management computer 1912 and the billing network 1919, or if the access management computer 1912 continuously monitors access to that particular on-line service provider 1927 for that particular access message 1939, the access management computer 1912 will signal the billing network 1919 that billing for that session is to be completed. The user is billed for access to the on-line service provider as described with respect to the first principal embodiment. However, in this embodiment, the user may be billed for all time on the 900 line, plus the costs of access to any of the on-line service providers 1927. Since different on-line service providers may charge different amounts for access, such charges could be itemized on the user's bill for calls made to the billing network. In an alternative single communication channel embodiment, the access message 1939 may be authenticatable whereby it is generated by the user computer using known encryption protocols and is communicated to the on-line service provider 1927 through the data network 1918 whereupon it is read and authenticated (decrypted) by the on-line service provider 1927 for access. In this regard, the authenticatable access message may contain user-specified limitations as to desired access time and maximum cost to be incurred for any session.

Referring now to FIGS. 20 and 21, there is depicted a third principal embodiment of the invention in which credit is obtained from the billing network and charged to the user through the phone company as described above with respect to the other embodiments. This credit is downloaded to the user computer 2022 and communicated to the on-line service provider 2027 over the data network 2018. The system operates in the following manner. First, the user computer 2022 dials the 900# 2035 and connects to the access management computer 2012. This may be done either on a single telephone line 2026 which serves to connect to both the billing network 2019 and the data network 2018, or through a second telephone line 2030 which independently to communicates the user computer 2022 with the

billing network for the sole purpose of obtaining credit. The user is prompted through appropriate software to enter the amount of credit requested for on-line service provider access. The user enters the amount into the user computer 2022, and the access management computer 2012 generates an authenticatable value token message 2060 which is based upon the amount of credit requested, an identification message 2062 of the particular on-line service requested, and possibly the 900# or the user's own telephone number or some other personal identification code. The value token message is transmitted to the user computer 2022 and stored in memory. The user then connects to the on-line service provider 2027, which has its own computer 2052 that reads and authenticates the value token message 2060. The authentication may take the form of encryption and decryption. The user is then provided access to the on-line service provider to the extent of available credit embodied in the value token message 2060. The value token message 2060 may be obtained in fractional amounts if desired. In this regard, the value token message 2060 may represent a series of fractional amounts of credit (e.g., pennies, dimes or quarters) which are used by the on-line service provider to gain access for corresponding limited amounts of time. Thus, the on-line service provider 2027 would intermittently read and authenticate the value token message 2060 and allow the user continued access to the extent of any remaining credit. When all credit is exhausted, access for the user is terminated until the user goes back to the billing network 2019 and repeats the procedure. The user is billed through the billing system 2034 and revenues are shared with the on-line service provider 2027 as described above with respect to the other embodiments.

Referring now to FIGS. 22 and 23, in a fourth principal embodiment of the invention, the user computer 2222 communicates through the telephone network 2216 with an access billing site ("billsite") 2245 which regulates all billing for and access to the information service on-line service providers 2227. The billing site 2245 has an access management computer 2212 associated therewith which facilitates access to the on-line service providers 2227 and communicates with a billing system 2234. The billing system 2234 bills access charges to the user's on-line service account 2250. When a user desires to obtain access to an on-line service provider 2227, he or she is prompted by the billsite 2245 to enter a message ID 2249 associated with the user's on-line billing account 2250. The billsite then provides an anonymous access message 2252 to the particular on-line service provider 2227 to which access is requested. The on-line service provider 2227 may have its own computer 2252 which records the amount of time access is made

available for any given session. Similarly, the access management computer 2212 at the billsite 2245 may do the same to serve as a redundant audit trail. The access management computer associated with the billsite 2245 continuously monitors the connection. When the user desires to terminate access to the on-line service provider 2227, the access management computer 2212 sends a termination message 2256 to the on-line service provider 2227 to terminate user access. The process may be repeated if the user desires access to another on-line service provider 2227. The billsite 2245 accumulates bills for all on-line service provider sessions, and then bills the user through the billing system 2234 in a conventional manner. Since the charges for various on-line service providers 2227 may vary, the billsite 2245 can bill the user a single aggregate charge for all on-line service providers accessed during any given period of time, even if the individual charges differ among all of the on-line service providers.

Various embodiments of the present invention include:

A1. A method for utilizing an access management computer to control a user's access to digital data located at a data site and for causing a billing system to toll said user's access to data, comprising the steps of:

said access management computer receiving, from said billing system, a first access code corresponding to said user's request for access to said digital data;
said access management computer receiving a second access code from said data site;

said access management computer verifying that said first access code corresponds to said second access code;

said access management computer communicating a message confirming said verifying to said data site, thereby authorizing said user's access to said digital data; and

said access management computer authorizing said billing system to post an access charge to an account associated with said user based upon said user's access to said digital data.

A2. The method of embodiment A1, wherein said billing system comprises a shared-revenue communications line.

A3. The method of embodiment A2, wherein said shared-revenue communications line comprises a telephone line such as a "900" line or equivalent.

A4. The method of embodiment A1, wherein said access management computer and said billing system are located remotely from each other.

A5. The method of embodiment A1, wherein one of said first and second access codes is received before the other of said first and second access

codes and stored in said access management computer in anticipation of the receipt of the other of said first and second access codes.

A6. The method of embodiment A1, wherein said first and said second access codes are identical.

5 A7. The method of embodiment A1, wherein said user provides said first access code to said billing system.

A8. The method of embodiment A7, wherein said first access code is provided to said user by said data site.

10 A9. The method of embodiment A8, further comprising the step of said access management computer generating said first access code and transmitting said first access code to said data site, prior to said step of providing said first access code to said user.

15 A10. The method of embodiment A9, wherein said access management computer generates said first access code in response to a request from said data site, subsequent to said user's connection thereto.

A11. The method of embodiment A1, wherein said first and second access codes are generated by said user.

A12. The method of embodiment A11, wherein said first and second access codes include said user's telephone number.

20 A13. The method of embodiment A1, wherein said first access code includes pricing information corresponding to said user access to said data site.

A14. The method of embodiment A1, wherein said first access code includes usage information corresponding to the number of times said access code may be used.

25 A15. The method of embodiment A1, further comprising the step of said access management computer signaling said data site to terminate the user's authorization to access said digital data upon the occurrence of a predetermined event.

30 A16. The method of embodiment A15, wherein said predetermined event includes passage of a specified time interval.

A17. The method of embodiment A15, wherein said predetermined event includes accrual of a predetermined billing amount.

A18. The method of embodiment A15, wherein said predetermined event includes receiving a user disconnect signal from said billing system.

35 A19. The method of embodiment A15, wherein said predetermined event includes obtaining a session completion indication from said data site.

A20. The method of embodiment A1, wherein said access charge is based on a quantity of information which said user has requested from said data site.

A21. The method of embodiment A1, wherein said access charge is based on the period of time during which said user was connected to said data site.

5 A22. The method of embodiment A1, wherein said access management computer is connected to said billing system over a first communication channel, and said access management computer is connected to said data site over a second communication channel.

10 A23. The method of embodiment A9, wherein said first access code corresponds to database record values stored at said access management computer.

A24. The method of embodiment A23, wherein said database record value includes a dollar value associated with the use of said access code.

A25. The method of embodiment A24, wherein said database record value further includes an expiration date for said access code.

15 A26. The method of embodiment A1, wherein said digital data represents a confirmation of the purchase of physical goods.

A27. An access management computer for controlling a user's access to digital data located at a data site and for causing a billing system to toll said user's access to said digital data, comprising:

20 means for receiving, from said billing system, a first access code corresponding to said user's request for access to said digital data;

means for receiving a second access code from said data site;

means for verifying that said first access code corresponds to said second access code;

25 means for communicating a message confirming said verifying to said data site, thereby authorizing said user's access to said digital data; and

means for authorizing said billing system to post an access charge to an account associated with said user based upon said user's access to said digital data.

30 A28. The access management computer of embodiment A27, wherein said billing system comprises a shared-revenue communications line.

A29. The access management computer of embodiment A28, wherein said shared-revenue communications line comprises a telephone line such as a "900" line or equivalent.

35 A30. The access management computer of embodiment A27, wherein said access management computer and said billing system are located remotely from each other.

A31. The access management computer of embodiment A27, wherein one of said first and second access codes is received before the other of said first and second access codes and further comprising means for storing in said access management computer the first received of said access codes in anticipation of the receipt of the other of said first and second access codes.

A32. The access management computer of embodiment A27, wherein said first and said second access codes are identical.

A33. The access management computer of embodiment A27, and further comprising means for permitting said user to provide said first access code to said billing system.

A34. The access management computer of embodiment A33, and further comprising means for providing said first access code to said user from said data site.

A35. The access management computer of embodiment A34, further comprising means for generating said first access code and transmitting said first access code to said data site, prior to providing said first access code to said user.

A36. The access management computer of embodiment A35, and further comprising means for generating said first access code in response to a request from said data site, subsequent to said user's connection thereto.

A37. The access management computer of embodiment A27, wherein said first and second access codes are generated by said user.

A38. The access management computer of embodiment A37, wherein said first and second access codes include said user's telephone number.

A39. The access management computer of embodiment A27, wherein said first access code includes pricing information corresponding to said user access to said digital data.

A40. The access management computer of embodiment A27, wherein said first access code includes usage information corresponding to the number of times said access code may be used.

A41. The access management computer of embodiment A27, further comprising means for signaling said data site to terminate the user's authorization to access said digital data upon the occurrence of a predetermined event.

A42. The access management computer of embodiment A41, wherein said predetermined event includes passage of a specified time interval.

A43. The access management computer of embodiment A41, wherein said predetermined event includes accrual of a predetermined billing amount.

A44. The access management computer of embodiment A41, wherein said predetermined event includes receiving a user disconnect signal from said billing system

5 A45. The access management computer of embodiment A41, wherein said predetermined event includes obtaining a session completion indication from said data site.

A46. The access management computer of embodiment A27, wherein said access charge is based on a quantity of information which said user has requested from said data site.

10 A47. The access management computer of embodiment A27, wherein said access charge is based on the period of time during which said user was connected to said data site.

A48. The access management computer of embodiment A27, wherein said access management computer is connected to said billing system over a first communication channel, and said access management computer is connected to said data site over a second communication channel.

A49. The access management computer of embodiment A35, wherein said first access code corresponds to database record values stored at said access management computer.

20 A50. The access management computer of embodiment A49, wherein said database record value includes a dollar value associated with the use of said access code.

A51. The access management computer of embodiment A50, wherein said database record value further includes an expiration date for said access code.

25 A52. The access management computer of embodiment A27, wherein said digital data represents a confirmation of the purchase of physical goods.

A53. A method for utilizing a billing site to toll a user's access to digital data at a data site through signaling an access management computer to authorize said user's access to said digital data, comprising the steps of:

30 receiving at said billing site a user's request for access to said digital data, said request for access being associated with a billing account for charging said user, said request for access including a code corresponding to said digital data;

35 routing from said billing site to said access management computer a signal indicating that said billing site has received said code corresponding to said user request for access to said digital data;

receiving at said billing site from said access management computer a signal that said user has received access to said digital data; and

posting via said billing site an access charge to said billing account based upon said user's access to said digital data.

5 A54. The method of embodiment A53, wherein said billing site comprises a shared-revenue communications line.

A55. The method of embodiment A54, wherein said shared-revenue communications line comprises a "900" telephone line or equivalent.

10 A56. The method of embodiment A53, wherein said routing step includes the step of establishing a communications link with said access management computer for the period that said user is authorized access to said data site.

A57. Apparatus for tolling a user's access to digital data at a data site by signaling an access management computer to authorize said user's access to said digital data, said apparatus comprising:

15 means for receiving a user's request for access to said digital data, said request for access being associated with a billing account for charging said user, said request for access including a code corresponding to said digital data;

means for routing to said access management computer a signal indicating the receipt of said code corresponding to said user request for access to
20 said digital data;

means for receiving from said access management computer a signal that said user has received access to said digital data; and

means for posting an access charge to said billing account based upon said user's access to said digital data.

25 A58. The apparatus of embodiment A57, wherein said billing site comprises a shared-revenue communications line.

A59. The apparatus of embodiment A58, wherein said shared-revenue communications line comprises a "900" telephone line or equivalent.

30 A60. The apparatus of embodiment A57, further comprising a communications link maintained with said access management computer during the time said user accesses said digital data.

A61. A method for a user to access stored digital information at a data site, comprising the steps of:

35 communicating from said user to a billing system a first access code authorizing said billing system to charge a billing account for access to said stored digital information;

receiving by said user from said billing system a second access code
permitting said user to access said stored digital information at said data site;
connecting by said user to said data site; and
providing from said user to said data site said second access code
5 whereby to gain access to said stored digital information.

A62. The method of embodiment A61, wherein said first and second
access codes are identical.

A63. The method of embodiment A61, wherein said first and second
access codes are generated by an access management computer separate from and
10 in communication with both said billing system and said remote data site.

A64. The method of embodiment A61, wherein said billing system
comprises a shared-revenue communications line.

A65. The method of embodiment A64, wherein said shared-revenue
communications line comprises a "900" telephone line or equivalent.

15 A66. The method of embodiment A61, and further including the steps of:
establishing with said billing system a data communications link;
and

establishing with said remote data site a communications link.

20 A67. The method of embodiment A66, wherein said communications link
with said billing system and said communications link with said remote data site
are established simultaneously for at least a period of time during which said user
is connected to said remote data site.

25 A68. The method of embodiment A66, wherein said communications link
with said billing system and said communications link with said remote data site
are established at separate times.

A69. A user computer for a user to access stored digital information at a
remote data site while said user access to said remote data site is tolled by a billing
system, comprising:

30 means for communicating from said user to said billing system a
first access code authorizing said billing system to charge a billing account for
access to said stored digital information;

means for receiving by said user from said billing system a second
access code permitting said user to access said stored digital information at said
data site;

35 means for connecting by said user to said data site; and

means for providing from said user to said data site said second
access code whereby to gain access to said stored digital information.

A70. The user computer of embodiment A69, wherein said first and second access codes are identical.

A71. The user computer of embodiment A69, wherein said first and second access codes are generated by an access management computer separate from and in communication with both said billing system and said remote data site.

A72. The user computer of embodiment A69, wherein said billing system comprises a shared-revenue communications line.

A73. The user computer of embodiment A72, wherein said shared-revenue communications line comprises a "900" telephone line or equivalent.

A74. The user computer of embodiment A69, and further including:
means for establishing a data communications link with said billing system; and

means for establishing a data communications link with said remote data site.

A75. The access computer of embodiment A74, wherein said means for establishing said data communications link with said billing system and said means for establishing said data communications link with said remote data site are separate whereby said data communications links may be established simultaneously for at least a period of time during which said user is connected to said remote data site.

A76. The access computer of embodiment A75, wherein said data communications link with said billing system and said data communications link with said remote data site are established at separate times.

A77. A method for utilizing a billing site to toll a user's access to a data site through an access management computer, comprising the steps of:

establishing a communications link between said user and said billing site, said communications link associated with a billing account for charging said user;

establishing a communications link between said billing site and said access management computer; sending from said billing site to said access management computer a signal indicating that said communications link between said user and said billing site is active, whereby to authorize said user access to said data site;

receiving at said billing site from said access management computer a signal that said user has received access to said data site; and

posting via said billing site an access charge to said billing account based upon said user's access to said data site.

A78. The method of embodiment A77, wherein said billing site comprises a shared-revenue communications line.

5 A79. The method of embodiment A78, wherein said shared-revenue communications line comprises a "900" telephone line or equivalent.

A80. The method of embodiment A77, further including the step of sending from said billing system to said access management computer a signal indicating if said communications link between said user and said billing system
10 becomes inactive, whereby to terminate the authorization of said user to access said data site.

A81. Apparatus for tolling a user's access to a data site by signaling an access management computer to authorize said user's access to said data site, said apparatus comprising:

15 means for establishing a communications link with a user; means for receiving via said communications link a user's request for access to said data site, said request for access being associated with a billing account for charging said user;

20 means for routing to said access management computer a signal indicating that said communications link with said user is active, whereby to authorize said user access to said data site;

means for receiving from said access management computer a signal that said user has received access to said data site; and

25 means for posting an access charge to said billing account based upon said user's access to said data site.

A82. The apparatus of embodiment A81, wherein said billing site comprises a shared-revenue communications line.

A83. The apparatus of embodiment A82, wherein said shared-revenue communications line comprises a "900" telephone line or equivalent.

30 A84. The apparatus of embodiment A81, further comprising means for routing to said access management computer a signal that said communications link with said user is inactive, whereby to terminate the authorization of said user to access said data site.

35 B1. A billing and collection system for enabling shared revenues between a service provider over a data network and a billing network by billing a customer for a separate telephone connection over a second telephone line through the billing network where the telephone connection on the second telephone line

regulates access to the service provided over the data network on the first telephone line, comprising:

a data network including at least one user on-line service provider for on-line access by a user over a first telephone line with a user computer through said data network;

a billing network accessible through a second telephone line; and

an access management computer for controlling access to said on-line service provider by at least one of generating, and retrieving from a database, an access message in response to a telephone connection over said second telephone line through said billing network, and using said access message to allow the user to access said on-line service provider,

whereby a prescribed toll fee for said telephone connection over said second telephone line is billed to the user for calls made on said second telephone line over said billing network, and revenues collected from said toll fee are shared with said on-line service provider.

B2. The billing and collection system recited in embodiment B1, wherein said on-line service provider downloads software over said data network to said user computer.

B3. The billing and collection system recited in embodiment B1, wherein said user computer communicates with said billing network through said second telephone line to connect to said access management computer.

B4. A method for billing and collection in a system for enabling shared revenues between a service provider over a data network and a separate billing network by billing a customer for a separate telephone connection over a second telephone line through the billing network where the telephone connection on the second telephone line regulates access to the service provided over the data network on the first telephone line comprising: a data network including at least one on-line service provider for on-line access by a user over a first telephone line with a user computer through said data network; a billing network accessible through a second telephone line; and an access management computer for controlling access to said on-line service provider by at least one of generating, and retrieving from a database, an access message in response to a telephone connection over said second telephone line, and using said access message to allow the user to access the on-line service provider until termination of said telephone connection over said second telephone line, comprising the steps of:

(a) connecting said user computer to said data network over said first telephone line to reach an on-line service provider;

(b) at least one of the user and said user computer calling a 900-type shared revenue telephone number over said second telephone line through said billing network to establish a telephone connection to said access management computer;

(c) at least one of generating and retrieving from a database, an access message with said access management computer and communicating said access message to at least one of the user, said user computer and said on-line service provider;

(d) enabling access to said on-line service provider for the user on said user computer upon receipt of said access message by said on-line service provider from said access management computer;

(e) communicating information from said on-line service provider to said user computer;

(f) terminating said telephone connection on said second telephone line to cause said access management computer to terminate access to said on-line service provider; and

(g) said billing network generating a billing charge associated with said telephone connection on said second telephone line, billing the user and sharing revenues with said on-line service provider.

B5. A method for billing and collection in a system for enabling shared revenues between a service provider over a data network and a separate billing network by billing a customer for a separate telephone connection over a second telephone line through the billing network where the telephone connection on the second telephone line regulates access to the service provided over the data network on the first telephone line comprising: a data network including at least one on-line service provider for on-line access by a user over a first telephone line with a user computer through said data network; a billing network accessible through a second telephone line; and an access management computer for controlling access to said on-line service provider by at least one of generating and retrieving from a database, an access message in response to a telephone connection over said second telephone line, comprising the steps of:

(a) connecting said user computer to said data network over said first telephone line to reach an on-line service provider;

(b) at least one of the user and said user computer calling a 900-type shared revenue telephone number over said second telephone line through said billing network to establish a telephone connection to said access management computer;

(c) at least one of generating and retrieving from a database, an access message with said access management computer to enable access to said on-line

service provider for a predetermined amount of time and communicating said access message to at least one of the user, said user computer and said on-line service provider;

5 (d) communicating information from said on-line service provider to said user computer; and

(e) said billing network generating a billing charge associated with said telephone connection on said second telephone line, billing the user and sharing revenues with said on-line service provider.

10 B6. The method recited in embodiment B5, wherein step (d) comprises downloading software associated with said on-line service provider over said data network to said user computer.

15 B7. A billing and collection system for enabling shared revenues between a service provider over a data network and a billing network by billing a customer for a telephone connection through the billing network where the telephone connection regulates access to the service provided over the data network, comprising:

a data network including at least one user on-line service provider for on-line access by a user with a user computer through said data network;

a billing network accessible from said user computer; and

20 an access management computer for controlling access to said on-line service provider over said data network by at least one of generating, and retrieving from a database, an access message in response to a telephone connection between said user computer and said access management computer over said billing network, said access management computer communicating said access message to
25 said on-line service provider to allow the user to access the on-line service provider from said user computer,

whereby a prescribed toll fee for said telephone connection over said second telephone line is billed to the user for calls made on said second telephone line over said billing network, and revenues collected from said toll fee are shared
30 with said on-line service provider.

B8. The billing and collection system recited in embodiment B7, wherein said user computer generates an authenticatable access message which is read and authenticated by said on-line service provider, where said authenticatable access message represents user-selected limitations including access time and costs.

35 B9. A method for billing and collection in a system for enabling shared revenues between a service provider over a data network and a separate billing network where the telephone connection to the billing network facilitates access to

the service provided over the data network: comprising a data network including at least one on-line service provider for on-line access by a user over said data network; a billing network; and an access management computer for controlling access to said on-line service provider and providing said billing network with an authenticatable value token message representing credit provided to the user for access to said on-line service, comprising the steps of:

(a) connecting said user computer to access management computer through said billing network;

(b) generating an authenticatable value token message with said access management computer, and communicating said authenticatable value token message to said user computer, said authenticatable value token message representing user credit for access to said on-line service provider;

(c) communicating said authenticatable value token message from said user computer to said on-line service provider where said on-line service provider reads and authenticates said authenticatable value token message;

(d) enabling access to said on-line service provider for the user on said user computer and communicating information from said on-line service provider to said user computer; and

(e) said billing network generating a billing charge for said user credit and sharing revenues with said on-line service provider.

Those skilled in the art will recognize that the method and apparatus of the present invention has many applications, and that the present invention is not limited to the representative examples disclosed herein. Moreover, the scope of the present invention covers conventionally known variations and modifications to the system components described herein, as would be apparent to those skilled in the art based on the present disclosure.